

# Precision Positioning Stage | PPS-28SM

The PPS-28 Stepper Motor version is suitable for applications requiring high speed and high blocking force. Miniature crossed roller bearings assure high stiffness and guiding accuracy for loads up to 50 N (horizontal orientation). It utilizes a 2-phase stepper motor resulting in high speed (> 5 mm/s) and high blocking force (> 5 N). The PPS-28SM is available in open loop or with an external encoder. Open loop resolutions of 100 nm are achievable. Versions capable of operation in vacuum ( $10^{-6}$  mbar) are available. The PPS-28SM is compatible with the MMC-200 controller.

## KEY FEATURES

- Travel range of up to 102 mm
- Stepper Motor - Leadscrew drive (Optional Ball Screw)
- 50 nm encoder resolution
- Load capacity up to 5 kg
- Crossed roller bearing
- Low profile, 15 mm height
- Vacuum versions available

## TECHNICAL DATA

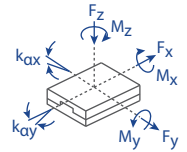
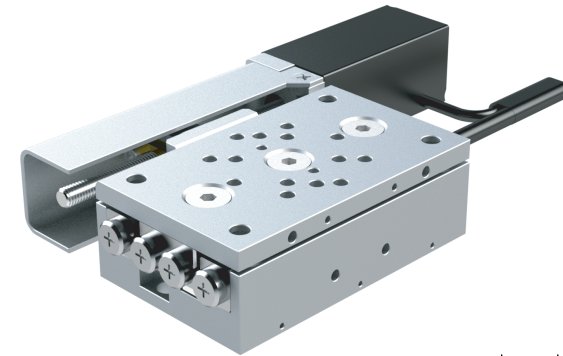
Travel range [mm]	26	51	76	102
Straightness / Flatness [ $\mu\text{m}$ ]	$\pm 1.5$	$\pm 2.5$	$\pm 3$	$\pm 3.5$
Pitch [ $\mu\text{rad}$ ]	$\pm 50$	$\pm 70$	$\pm 80$	$\pm 100$
Yaw [ $\mu\text{rad}$ ]	$\pm 60$	$\pm 75$	$\pm 90$	$\pm 100$
Weight [g], Open Loop	110	180	240	290
Weight [g], Closed Loop	120	190	250	300
<b>Motor option</b>	<b>2-Phase Stepper Motor</b>			
Speed, max [mm/s]	5			
<b>Encoder option</b>	<b>None (open loop)</b>	<b>Analog (1 <math>V_{pp}</math>)</b>	<b>Digital (RS-422)</b>	
Resolution, typical [ $\mu\text{m}$ ]	0.1	0.05	0.05	
Repeatability, bi-directional [ $\mu\text{m}$ ]	$\pm 4$	$\pm 0.2$	$\pm 0.2$	
Repeatability, uni-directional [ $\mu\text{m}$ ]	0.5	0.2	0.2	
<b>Materials</b>	aluminum body, steel bearing, brass nut (other materials i.e. stainless steel, titanium, etc. available upon request)			

## ORDERING INFORMATION

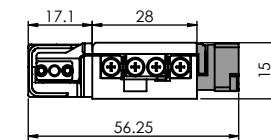
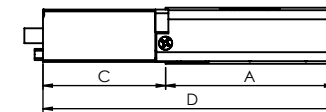
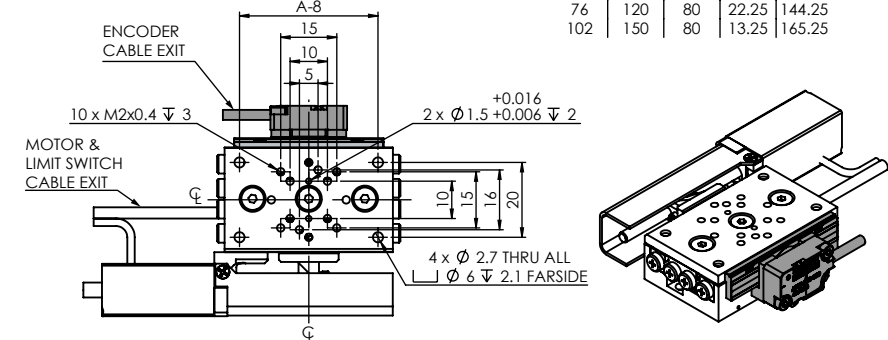
PPS-28- 2 | | | 1

<b>DRIVE</b>	Stepper Motor, SM-007 .....	2
<b>TRAVEL</b>	26 mm .....	1
	51 mm .....	3
	76 mm .....	4
	102 mm .....	5
<b>ENCODER</b>	None .....	0
	Analog (1 $V_{pp}$ ) .....	2
	Digital (RS-422) .....	3
<b>LIMIT SWITCH</b>	Magnetic .....	1
<b>ENVIRONMENT</b>	Atmospheric .....	0
	High Vacuum, $10^{-6}$ mbar .....	6

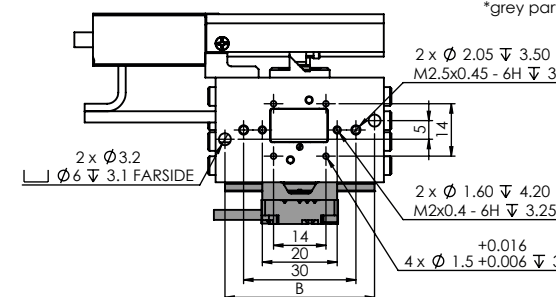
Load, max	$F_x$ [N]	$F_y$ [N]	$F_z$ [N]	$M_x$ [N-m]	$M_y$ [N-m]	$M_z$ [N-m]	$k_{ax}$ [ $\mu\text{rad/N-m}$ ]	$k_{ay}$ [ $\mu\text{rad/N-m}$ ]
SM-007	3	50	50	1	1	1	-	-



Travel	A	B	C	D
26	45	40	32.75	79.75
51	90	50	19.25	111.25
76	120	80	22.25	144.25
102	150	80	13.25	165.25



\*26 mm travel, external encoder version shown  
\*all dimensions are in millimeters  
\*grey parts for closed loop version only



Specifications are subject to change without notice.